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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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TITLE: REMOVABLE MICROFLUIDIC CELL

THE COMMISSIONER FOR PATENTS

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AMENDED CLAIMS

Claim 1 (original): A microfluidic flow cell for removably interfacing with a removable-member for performing a reaction therebetween, said microfluidic flow cell comprising:

at least one reaction portion defining with the removable-member a reaction chamber when said microfluidic flow cell and said removable-member are in an interfaced position thereof;

at least one fluid-receiving portion for receiving a fluid therein and being in fluid communication with said reaction chamber; and

a dispensing portion in fluid communication with said reaction chamber, said dispensing portion comprising a dispensing channel formed within said microfluidic flow cell;

wherein when in said interfaced position, said microfluidic flow cell is adapted to allow for the fluid in said fluid-receiving portion to flow to said reaction chamber.

Claim 2 (original): A microfluidic flow cell according to claim 1, further comprising a conduit providing said fluid communication between said fluid-receiving portion and said reaction chamber.

Claim 3 (original): A microfluidic flow cell according to claim 1, further comprising a plurality of separate fluid-receiving portions each receiving a respective fluid, each of said separate fluid-receiving portions being in fluid communication with a common said reaction chamber.

Claim 4 (original): A microfluidic flow cell according to claim 3 further comprising a plurality of separate conduits, each said separate conduit providing said fluid communication between a respective said fluid-receiving portion and said common reaction chamber.

Claim 5 (original): A microfluidic flow cell according to claim 4, wherein said plurality of separate conduits meet at a valve for fluid communication therewith, said valve being in fluid communication with said common reaction chamber.

Claim 6 (original): A microfluidic flow cell according to claim 5, wherein said fluid communication between said reaction chamber and said valve is provided by a common channel.

Claim 7 (original): A microfluidic flow cell according to claim 1, wherein said reaction portion comprises a reaction cavity.

Claim 8 (original): A microfluidic flow cell according to claim 7, wherein said cavity comprises a structure selected from the group consisting of indentations and at least one groove.

Claim 9 (original): A microfluidic flow cell according to claim 1, wherein said fluid-receiving portion comprises a reagent chamber, said fluid comprising a reagent.

Claim 10 (original): A microfluidic flow cell according to claim 1, wherein said fluid-receiving portion comprises a fluid-receiving chamber formed within said microfluidic flow cell.

Claim 11 (original): A microfluidic flow cell according to claim 1, wherein said fluid-receiving portion comprises a fluid-receiving cavity defining a fluid-receiving chamber with said removable-member when said microfluidic flow cell and said removable-member are in said interfaced position.

Claim 12 (original): A microfluidic flow cell according to claim 2, wherein said conduit is formed within said microfluidic flow cell.

Claim 13 (original): A microfluidic flow cell according to claim 2 further comprising a conduit cavity, said conduit-cavity defining said conduit when said microfluidic flow cell and said removable-member are in said interfaced position.

Claim 14 (original): A microfluidic flow cell according to claim 3, wherein said at least one of said plurality of conduits is formed within said microfluidic flow cell.

Claim 15 (original): A microfluidic flow cell according to claim 3, wherein at least one of said plurality of conduits is defined by a conduit in said microfluidic flow cell when said microfluidic flow cell and said removable member are in said interfaced position.

Claim 16 (original): A microfluidic flow cell according to claim 5, wherein said valve is formed within said microfluidic flow cell.

Claim 17 (original): A microfluidic flow cell according to claim 5 further comprising a valve-cavity, said valve-cavity defining said valve when said microfluidic flow cell and said removable-member are in said interfaced position.

Claim 18 (original): A microfluidic flow cell according to claim 6, where said common channel is formed within said microfluidic flow cell.

Claim 19 (original): A microfluidic flow cell according to claim 18, further comprising a common channel-cavity, said common channel-cavity defining said common channel when said microfluidic flow cell and said removable-member are in said interfaced position.

Claim 20 (original): A microfluidic flow cell according to claim 1, further comprising a plurality of separate fluid-receiving portions, each said fluid-receiving portion of said plurality being in fluid communication with a common channel, said common channel being in communication with said reaction chamber.

Claim 21 (original): A microfluidic flow cell according to claim 20, wherein each said separate fluid-receiving portions comprises a pair of elongate bores meeting at a common part of said common channel.

Claim 22 (original): A microfluidic flow cell according to claim 21, wherein said common part comprises a valve.

Claim 23 (original): A microfluidic flow cell according to claim 20, wherein said common channel is formed within said microfluidic flow cell.

Claim 24 (original): A microfluidic flow cell according to claim 20, further comprising a common channel-cavity, said common channel-cavity defining said common channel when said microfluidic flow cell and said removable-member are in said interfaced position.

Claim 25 (original): A microfluidic flow cell according to claim 21 wherein said pair of elongate bores are formed within said microfluidic flow cell.

Claim 26 (original): A microfluidic flow cell according to claim 21, wherein said elongate bored are formed by complementary elongate bore portions defined by said microfluidic flow cell and said removable-member when in said interfaced position.

Claim 27 (original): A microfluidic flow cell according to claim 22, wherein said valve is formed within said microfluidic flow cell.

Claim 28 (original): A microfluidic flow cell according to claim 22 further comprising a valve-cavity, said valve-cavity defining said valve when said microfluidic flow cell and said removable-member are in said interfaced position.

Claim 29 (original): A microfluidic flow cell according to claim 1, wherein said dispensing portion is in fluid communication with the external environment of said microfluidic flow cell.

Claim 30 (original): A microfluidic flow cell according to claim 1, wherein said dispensing portion comprises a dispensing channel, said microfluidic flow cell further comprising a dispensing channel-cavity, said dispensing channel-cavity defining said dispensing channel when said microfluidic flow cell and said removable-member are in said interfaced position.

Claim 31 (original): A microfluidic flow cell according to claim 1, wherein said microfluidic flow cell comprises hydrophobic material.

Claim 32 (original): A microfluidic flow cell according to claim 1, wherein said microfluidic flow cell comprises a substrate.

Claim 33 (original): A microfluidic flow cell according to claim 32, wherein said substrate comprises elastomeric material.

Claim 34 (original): A microfluidic flow cell according to claim 33, wherein said elastomeric material comprises PDMS.

Claim 35 (original): A microfluidic flow cell according to claim 1, wherein said removable-member comprises a support for performing a reaction thereon.

Claim 36 (original): A microfluidic flow cell according to claim 35, wherein said support comprises hydrophobic material.

Claim 37 (original): A microfluidic flow cell according to claim 35, wherein said support is functionalized to allow for the binding of probes thereon.

Claim 38 (original): A microfluidic flow cell according to claim 35, wherein said support comprises glass.

Claim 39 (original): A microfluidic flow cell according to claim 1, wherein said support comprises a microarray.

Claim 40 (original): A microfluidic flow cell according to claim 39, wherein said microarray comprises bioprobe spots.

Claim 41 (cancelled)

Claim 42 (original): A microfluidic flow cell according to claim 39 further comprising a plurality of fluid-receiving portions and a plurality of channels in fluid communication therewith, said channels being in communication with said reaction chamber.

Claim 43 (original): A microfluidic flow cell according to claim 42, wherein said plurality of channels access individual spots of said microarray.

Claim 44 (original): A microfluidic flow cell according to claim 42, wherein said plurality of channels access individual groups of spots of said microarray.

Claim 45 (original): A microfluidic flow cell according to claim 1, wherein said removable-member comprises an enclosure.

Claim 46 (original): A microfluidic flow cell according to claim 45, wherein said enclosure comprises a removable seal.

Claim 47 (original): A microfluidic flow cell according to claim 1 being adapted to be actuated so as to provide for the fluid in said fluid-receiving portion to flow to said reaction chamber.

Claims 48 – 49 (cancelled)

Claim 50 (original): A microfluidic flow cell according to claim 1 further comprising at least one vent, said vent being in fluid communication with the ambient environment and with said reaction chamber.

Claim 51 (original): A microfluidic flow cell according to claim 1 further comprising at least one vent, said vent being in fluid communication with the ambient environment and with said fluid-receiving portion.

Claim 52 (original): A microfluidic flow cell according to claim 2, further comprising at least one vent, said vent being in fluid communication with the ambient environment and with said conduit.

Claim 53 (original): A microfluidic flow cell according to claim 5, further comprising at least one vent, said vent being in fluid communication with the ambient environment and with said valve.

Claim 54 (original): A microfluidic flow cell according to claim 18, further comprising at least one vent, said vent being in fluid communication with the ambient environment and with said common channel.

Claim 55 (original): A microfluidic flow cell according to claim 20, further comprising at least one vent, said vent being in fluid communication with the ambient environment and with said common channel.

Claim 56 (original): A microfluidic flow cell according to claim 1, further comprising at least one vent, said vent being in fluid communication with the ambient environment and with said dispensing portion.

Claim 57 (original): A microfluidic flow cell according to claim 1, wherein said removable member comprises an auxiliary microfluidic flow cell.

Claim 58 (original): A microfluidic flow cell according to claim 1, wherein said removable-member comprises a support comprising a support cavity defining said reaction chamber when in said interfacing position, said reaction cavity comprising a fluid outlet in communication with said reaction chamber.

Claims 59 – 141 (cancelled)